

Math 150 Notes for Homework # 7, 8, and 9.

HW#7: To estimate the integral of $\cos(x) - \sin(2x)$ from $x = 0$ to $\pi/6$, we use a numeric variable x . Notice how I must type a period before each operation (except for addition and subtraction.) Use "vpa" to estimate to four digits.

```
x=0:0.01*(pi/6):pi/6; %I could have also used linspace.  
y=(cos(x)-sin(2.*x))*0.01*(pi/6); %This is one term of the sum  
I=sum(y)
```

I = 0.2526

HW#8: To find the exact value of the definite integral we use a symbolic variable and the "int" command. I will use capital X to distinguish from the numeric x.

```
syms X  
int(cos(X)-sin(2*X),X,0, pi/6)
```

ans =

$\frac{1}{4}$

HW#9: The area between $\cos(t)$ and $\sin(2t)$ from 0 to $\pi/2$ is shaded below. I need to use a numeric variable for this part.

```
t=linspace(0,pi/2); %t gets 100 equally spaced values  
y1= cos(t);  
y2= sin(2.*t);  
plot(t,y1,'k')  
hold on  
plot(t,y2,'k')  
for i=1:100  
plot([t(i) t(i)],[y1(i) y2(i)],'r')  
end  
hold off
```

